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(FILE 'HOME' ENTERED AT 13:39:17 ON 11 APR 2008)

FILE 'HCAPLUS, INSPEC, JAPIO, USPATFULL, USPATOLD, USPAT2' ENTERED AT
13:39:38 ON 11 APR 2008

L1 663 S (GAN OR GALLIUM(W)NITRIDE) (8A) (FLUX)
L2 3711 S (GAN OR GALLIUM(W)NITRIDE) (10A) (SINGLE(W)CRYSTAL# OR MONO(W)C
L3 748 S (FLUX?) (8A) (NA(8A)METAL? OR SODIUM(8A)METAL?)
L4 184810 S (NITROGEN(8A)ATMOSPHERE#)
L5 99533 S (TOTAL?(6A)PRESSURE#)

=> s l2 and l3 and l4 and l5

L6 12 L2 AND L3 AND L4 AND L5

=> d 16 1-12 abs,bib

L6 ANSWER 1 OF 12 USPATFULL on STN

AB A method of growing a group III nitride crystal grows a group III
nitride crystal from a solution in which an alkaline metal, a group III
metal and nitrogen are dissolved, and includes, in the solution, a
material which increases solubility of the nitrogen into the solution.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2007:305850 USPATFULL

TI Method of growing group III nitride crystal, group III nitride crystal
grown thereby, group III nitride crystal growing apparatus and
semiconductor device

IN Iwata, Hirokazu, Miyagi, JAPAN
 Sarayama, Seiji, Miyagi, JAPAN
 Yamane, Hisanori, Miyagi, JAPAN
 Shimada, Masahiko, Miyagi, JAPAN
 Aoki, Masato, Miyagi, JAPAN

PI US 2007266928 A1 20071122

AI US 2007-878125 A1 20070720 (11)

RLI Division of Ser. No. US 2004-765502, filed on 28 Jan 2004, GRANTED, Pat.
No. US 7261775

PRAI JP 2003-19716 20030129
 JP 2003-71302 20030317
 JP 2003-81836 20030325
 JP 2004-11536 20040120
 JP 2004-12906 20040121
 JP 2004-13562 20040121

DT Utility

FS APPLICATION

LREP DICKSTEIN SHAPIRO LLP, 1825 EYE STREET NW, Washington, DC, 20006-5403,
US

CLMN Number of Claims: 19

ECL Exemplary Claim: 1-28

DRWN 19 Drawing Page(s)

LN.CNT 2529

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 2 OF 12 USPATFULL on STN

AB It is provided a method of growing gallium nitride
single crystal of good quality with a high
productivity, in the growth of gallium nitride
single crystal by Na-flux method. Gallium
nitride single crystal is grown using
flux 8 containing at least sodium metal.
Gallium nitride single crystal is

grown in atmosphere composed of gases mixture "B" containing nitrogen gas at a pressure of 300 atms or higher and 2000 atms or lower. Preferably, the nitrogen partial pressure in the atmosphere is 100 atms or higher and 2000 atms or lower. Preferably, the growth temperature is 1000° C. or higher and 1500° C. or lower.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2007:240075 USPATFULL

TI Gallium Nitride Single Crystal
Growing Method and Gallium Nitride Single
Crystal

IN Iwai, Makoto, Kasugai-city, JAPAN
Imai, Katsuhiro, Nagoya-city, JAPAN
Imaeda, Minoru, Nagoya-city, JAPAN

PA NGK Insulators, Ltd., Nagoya-city, JAPAN, 467-8530 (non-U.S.
corporation)

PI US 2007209575 A1 20070913

AI US 2005-594846 A1 20050330 (10)
WO 2005-JP6692 20050330

20061108 PCT 371 date

PRAI JP 2004-103093 20040331

DT Utility

FS APPLICATION

LREP STEPTOE & JOHNSON LLP, 1330 CONNECTICUT AVENUE, N.W., WASHINGTON, DC,
20036, US

CLMN Number of Claims: 7

ECL Exemplary Claim: 1

DRWN 1 Drawing Page(s)

LN.CNT 278

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 3 OF 12 USPATFULL on STN

AB A group-III nitride crystal growth method comprises the steps of: a)
preparing a mixed molten liquid of an alkaline material and a substance
at least containing a group-III metal; b) causing growth of a group-III
nitride crystal from the mixed molten liquid prepared in the step a) and
a substance at least containing nitrogen; and c) creating a state in
which nitrogen can be introduced into the molten liquid prepared by the
step a).

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2006:155223 USPATFULL

TI Crystal growth method, crystal growth apparatus, group-III nitride
crystal and group-III nitride semiconductor device

IN Sarayama, Seiji, Miyagi, JAPAN
Yamane, Hisanori, Miyagi, JAPAN
Shimada, Masahiko, Miyagi, JAPAN
Kumano, Masafumi, Kanagawa, JAPAN
Iwata, Hirokazu, Miyagi, JAPAN
Araki, Takashi, Miyagi, JAPAN

PI US 2006130739 A1 20060622

AI US 2005-302128 A1 20051214 (11)

RLI Division of Ser. No. US 2002-134895, filed on 30 Apr 2002, GRANTED, Pat.
No. US 7001457

PRAI JP 2001-134171 20010501

JP 2001-147703 20010517

JP 2001-152977 20010522

JP 2001-195954 20010628

JP 2001-355720 20011121

JP 2001-358808 20011126

DT Utility
FS APPLICATION
LREP DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP, 2101 L Street, NW, Washington,
DC, 20037, US
CLMN Number of Claims: 11
ECL Exemplary Claim: 1
DRWN 28 Drawing Page(s)
LN.CNT 3036
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 4 OF 12 USPATFULL on STN
AB A method of growing a group III nitride crystal grows a group III
nitride crystal from a solution in which an alkaline metal, a group III
metal and nitrogen are dissolved, and includes, in the solution, a
material which increases solubility of the nitrogen into the solution.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AN 2004:289438 USPATFULL
TI Method of growing group III nitride crystal, group III nitride crystal
grown thereby, group III nitride crystal growing apparatus and
semiconductor device
IN Iwata, Hirokazu, Miyagi, JAPAN
Sarayama, Seiji, Miyagi, JAPAN
Yamane, Hisanori, Miyagi, JAPAN
Shimada, Masahiko, Miyagi, JAPAN
Aoki, Masato, Miyagi, JAPAN
PI US 2004226503 A1 20041118
US 7261775 B2 20070828
AI US 2004-765502 A1 20040128 (10)
PRAI JP 2003-19716 20030129
JP 2003-71302 20030317
JP 2003-81836 20030325
JP 2004-11536 20040120
JP 2004-12906 20040121
JP 2004-13562 20040121
DT Utility
FS APPLICATION
LREP DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP, 2101 L STREET NW, WASHINGTON,
DC, 20037-1526
CLMN Number of Claims: 49
ECL Exemplary Claim: 1
DRWN 19 Drawing Page(s)
LN.CNT 2724
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 5 OF 12 USPATFULL on STN
AB A method of making a bulk crystal substrate of a GaN
single crystal includes the steps of forming a molten
flux of an alkali metal in a reaction vessel and causing a growth of a
GaN single crystal from the molten flux,
wherein the growth is continued while replenishing a compound containing
N from a source outside the reaction vessel.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AN 2004:42459 USPATFULL
TI Production of a GaN bulk crystal substrate and a semiconductor device
formed on a GaN bulk crystal substrate
IN Sarayama, Seiji, Miyagi, JAPAN
Shimada, Masahiko, Miyagi, JAPAN
Yamane, Hisanori, Miyagi, JAPAN
Iwata, Hirokazu, Miyagi, JAPAN

PI US 2004031437 A1 20040219
US 7250640 B2 20070731
AI US 2003-601301 A1 20030613 (10)
RLI Division of Ser. No. US 2000-590063, filed on 8 Jun 2000, GRANTED, Pat.
No. US 6592663
PRAI JP 1999-162411 19990609
JP 1999-237195 19990824
JP 1999-277045 19990929
JP 1999-295039 19991018
DT Utility
FS APPLICATION
LREP RICHARD F. JAWORSKI, Cooper & Dunham LLP, 1185 Avenue of the Americas,
New York, NY, 10036
CLMN Number of Claims: 77
ECL Exemplary Claim: 1
DRWN 21 Drawing Page(s)
LN.CNT 1085
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 6 OF 12 USPATFULL on STN
AB A group-III nitride crystal growth method, comprising the steps of: a) preparing a mixed molten liquid of an alkaline metal and a material at least comprising a group-III metal; b) growing a group-III nitride crystal of the group-III metal and nitrogen from the mixed molten liquid and a material at least comprising nitrogen; and c) setting a predetermined crystal growth condition according to a zone defined by a pressure and a temperature in said step b).

CAS INDEXING IS AVAILABLE FOR THIS PATENT.
AN 2003:235982 USPATFULL
TI Crystal growth method, crystal growth apparatus, group-III nitride crystal and group-III nitride semiconductor device
IN Sarayama, Seiji, Miyagi, JAPAN
Iwata, Hirokazu, Miyagi, JAPAN
Shimada, Masahiko, Miyagi, JAPAN
Yamane, Hisanori, Miyagi, JAPAN
Aoki, Masato, Miyagi, JAPAN
PI US 2003164138 A1 20030904
US 6949140 B2 20050927
AI US 2002-308149 A1 20021203 (10)
PRAI JP 2001-371147 20011205
JP 2002-3312 20020110
JP 2002-19986 20020129
JP 2002-119453 20020422
DT Utility
FS APPLICATION
LREP DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP, 2101 L STREET NW, WASHINGTON,
DC, 20037-1526
CLMN Number of Claims: 69
ECL Exemplary Claim: 1
DRWN 20 Drawing Page(s)
LN.CNT 2757
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 7 OF 12 USPATFULL on STN
AB A method of making a bulk crystal substrate of a GaN single crystal includes the steps of forming a molten flux of an alkali metal in a reaction vessel and causing a growth of a GaN single crystal from the molten flux, wherein the growth is continued while replenishing a compound containing N from a source outside the reaction vessel.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2003190451 USPATFULL

TI Production of a GaN bulk crystal substrate and a semiconductor device formed on a GaN bulk crystal substrate

IN Sarayama, Seiji, Miyagi, JAPAN

Shimada, Masahiko, Miyagi, JAPAN

Yamane, Hisanori, Miyagi, JAPAN

Iwata, Hirokazu, Miyagi, JAPAN

PA Ricoh Company Ltd., Tokyo, JAPAN (non-U.S. corporation)

PI US 6592663 B1 20030715

AI US 2000-590063 20000608 (9)

PRAI JP 1999-162411 19990609

JP 1999-237195 19990824

JP 1999-277045 19990929

JP 1999-295039 19991018

DT Utility

FS GRANTED

EXNAM Primary Examiner: Kunemund, Robert

LREP Cooper and Dunham, LLP.

CLMN Number of Claims: 51

ECL Exemplary Claim: 1

DRWN 23 Drawing Figure(s); 21 Drawing Page(s)

LN.CNT 997

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 8 OF 12 USPATFULL on STN

AB A group-III nitride crystal growth method comprises the steps of: a) preparing a mixed molten liquid of an alkaline material and a substance at least containing a group-III metal; b) causing growth of a group-III nitride crystal from the mixed molten liquid prepared in the step a) and a substance at least containing nitrogen; and c) creating a state in which nitrogen can be introduced into the molten liquid prepared by the step a).

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2002312884 USPATFULL

TI Crystal growth method, crystal growth apparatus, group-III nitride crystal and group-III nitride semiconductor device

IN Sarayama, Seiji, Miyagi, JAPAN

Yamane, Hisanori, Miyagi, JAPAN

Shimada, Masahiko, Miyagi, JAPAN

Kumano, Masafumi, Kanagawa, JAPAN

Iwata, Hirokazu, Miyagi, JAPAN

Araki, Takashi, Miyagi, JAPAN

PI US 2002175338 A1 20021128

US 7001457 B2 20060221

AI US 2002-134895 A1 20020430 (10)

PRAI JP 2001-134171 20010501

JP 2001-147703 20010517

JP 2001-152977 20010522

JP 2001-195954 20010628

JP 2001-355720 20011121

JP 2001-358808 20011126

DT Utility

FS APPLICATION

LREP DICKSTEIN SHAPIRO MORIN & OSHINSKY LLP, 2101 L STREET NW, WASHINGTON, DC, 20037-1526

CLMN Number of Claims: 82

ECL Exemplary Claim: 1

DRWN 28 Drawing Page(s)

LN.CNT 3408

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 9 OF 12 USPAT2 on STN

AB A method of growing a group III nitride crystal grows a group III nitride crystal from a solution in which an alkaline metal, a group III metal and nitrogen are dissolved, and includes, in the solution, a material which increases solubility of the nitrogen into the solution.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2004:289438 USPAT2

TI Methods of growing a group III nitride crystal

IN Iwata, Hirokazu, Miyagi, JAPAN

Sarayama, Seiji, Miyagi, JAPAN

Yamane, Hisanori, Miyagi, JAPAN

Shimada, Masahiko, Miyagi, JAPAN

Aoki, Masato, Miyagi, JAPAN

PA Ricoh Company, Ltd., Tokyo, JAPAN (non-U.S. corporation)

PI US 7261775 B2 20070828

AI US 2004-765502 20040128 (10)

PRAI JP 2003-19716 20030129

JP 2003-71302 20030317

JP 2003-81836 20030325

JP 2004-11536 20040120

JP 2004-12906 20040121

JP 2004-13562 20040121

DT Utility

FS GRANTED

EXNAM Primary Examiner: Kunemund, Robert

LREP Dickstein Shapiro LLP

CLMN Number of Claims: 21

ECL Exemplary Claim: 1

DRWN 37 Drawing Figure(s); 19 Drawing Page(s)

LN.CNT 2536

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 10 OF 12 USPAT2 on STN

AB A method of making a bulk crystal substrate of a GaN single crystal includes the steps of forming a molten flux of an alkali metal in a reaction vessel and causing a growth of a GaN single crystal from the molten flux, wherein the growth is continued while replenishing a compound containing N from a source outside the reaction vessel.

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2004:42459 USPAT2

TI Production of a GaN bulk crystal substrate and a semiconductor device formed on a GaN bulk crystal substrate

IN Sarayama, Seiji, Miyagi, JAPAN

Shimada, Masahiko, Miyagi, JAPAN

Yamane, Hisanori, Miyagi, JAPAN

Iwata, Hirokazu, Miyagi, JAPAN

PA Ricoh Company, Ltd., Tokyo, JAPAN (non-U.S. corporation)

PI US 7250640 B2 20070731

AI US 2003-601301 20030613 (10)

RLI Division of Ser. No. US 2000-590063, filed on 8 Jun 2000, Pat. No. US 6592663

PRAI JP 1999-162411 19990609

JP 1999-237195 19990824

JP 1999-277045 19990929

JP 1999-295039 19991018

DT Utility
FS GRANTED
EXNAM Primary Examiner: Ho, Tu-Tu
LREP Cooper & Dunham LLP
CLMN Number of Claims: 13
ECL Exemplary Claim: 1
DRWN 23 Drawing Figure(s); 21 Drawing Page(s)
LN.CNT 861
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 11 OF 12 USPAT2 on STN
AB A group-III nitride crystal growth method, comprising the steps of: a) preparing a mixed molten liquid of an alkaline metal and a material at least comprising a group-III metal; b) growing a group-III nitride crystal of the group-III metal and nitrogen from the mixed molten liquid and a material at least comprising nitrogen; and c) setting a predetermined crystal growth condition according to a zone defined by a pressure and a temperature in said step b).

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2003:235982 USPAT2
TI Crystal growth method, crystal growth apparatus, group-III nitride crystal and group-III nitride semiconductor device
IN Sarayama, Seiji, Miyagi, JAPAN
Iwata, Hirokazu, Miyagi, JAPAN
Shimada, Masahiko, Miyagi, JAPAN
Yamane, Hisanori, Miyagi, JAPAN
Aoki, Masato, Miyagi, JAPAN
PA Ricoh Company, Ltd., Tokyo, JAPAN (non-U.S. corporation)
PI US 6949140 B2 20050927
AI US 2002-308149 20021203 (10)
PRAI JP 2001-371147 20011205
JP 2002-3312 20020110
JP 2002-19986 20020129
JP 2002-119453 20020422
DT Utility
FS GRANTED
EXNAM Primary Examiner: Kunemund, Robert
LREP Dickstein Shapiro Morin & Oshinsky LLP
CLMN Number of Claims: 69
ECL Exemplary Claim: 1
DRWN 33 Drawing Figure(s); 20 Drawing Page(s)
LN.CNT 2718
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

L6 ANSWER 12 OF 12 USPAT2 on STN
AB A group-III nitride crystal growth method comprises the steps of: a) preparing a mixed molten liquid of an alkaline material and a substance at least containing a group-III metal; b) causing growth of a group-III nitride crystal from the mixed molten liquid prepared in the step a) and a substance at least containing nitrogen; and c) creating a state in which nitrogen can be introduced into the molten liquid prepared by the step a).

CAS INDEXING IS AVAILABLE FOR THIS PATENT.

AN 2002:312884 USPAT2
TI Crystal growth method, crystal growth apparatus, group-III nitride crystal and group-III nitride semiconductor device
IN Sarayama, Seiji, Miyagi, JAPAN
Yamane, Hisanori, Miyagi, JAPAN
Shimada, Masahiko, Miyagi, JAPAN

Kumano, Masafumi, Kanagawa, JAPAN
Iwata, Hirokazu, Miyagi, JAPAN
Araki, Takashi, Miyagi, JAPAN
PA Ricoh Company, Ltd., Tokyo, JAPAN (non-U.S. corporation)
PI US 7001457 B2 20060221
AI US 2002-134895 20020430 (10)
PRAI JP 2001-134171 20010501
JP 2001-147703 20010517
JP 2001-152977 20010522
JP 2001-195954 20010628
JP 2001-355720 20011121
JP 2001-358808 20011126
DT Utility
FS GRANTED
EXNAM Primary Examiner: Mills, Gregory; Assistant Examiner: Anderson, Matthew
LREP Dickstein Shapiro Morin & Oshinsky LLP
CLMN Number of Claims: 20
ECL Exemplary Claim: 1
DRWN 61 Drawing Figure(s); 28 Drawing Page(s)
LN.CNT 3174
CAS INDEXING IS AVAILABLE FOR THIS PATENT.

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